

REMARKS

Submitted herewith is a petition and payment via check for a one (1) month extension of time for filing the present amendment.

Claims 13, 4-9, 11-19 are all the claims presently pending in the Application. Claims 17-19 have been added and claim 4 has been converted into an independent claim.

It is noted that any claim amendments are made to merely clarify the language of each claim, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. It is further noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

Claims 1, 4-6, 9, and 12-14 stand rejected under 35 U.S.C. 102(e) as being anticipated by Hsieh (US App. 2004/0176062); claims 7 and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh; and claims 2-3, 8, 10-11, and 16 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh in view of Tasaki.

For the reasons stated below, Applicant traverses these rejections.

THE HSIEH AND TASAKI REFERENCES

Since claims 1 and 9 have been amended with claims 2 and 10, respectively, the rejections of claims 1 and 9 as to Hsieh under 35 U.S.C. 102 are moot and the 35 U.S.C. 103 rejections based upon the combination of Hsieh and Tasaki references will

be discussed.

The Examiner's allegations of anticipation are respectfully incorrect; Hsieh is performing a different determination than the claimed invention of searching for a tone in a signal than the claimed invention. The Examiner alleges Hsieh's step 106 corresponds to the step of calculating a zero crossing rate of a signal and step 118 corresponds to the step of comparing the maximum difference with the threshold. However, these steps are performing a different function than the claimed invention. Hsieh is using "a zero crossing rate (ZCR) operation" to determine whether the period of signal contains speech or not. Hsieh's disclosure can do this because it already knows the range of frequency within which speech is to be expected (6.5 to 250Hz in paragraph 28) for a walkie talkie. In the present invention, the frequency range for speech is unknown and the system does not use the ZCR alone to determine if speech is present.

The threshold used by Hsieh in step 118 is used to determine "whether or not the speech signal uses the logical channel" (para. 27), which is different than using the threshold to determine speech. Claim 1 recites the threshold is set to "define a zero amplitude change" and the ZCR is calculated along with parameters from plurality of duration periods in order to determine if there is a tone or not at this step by comparing the maximum difference with the threshold. In other words, the present invention uses the threshold to determine if tone is present: "declaring a sample of the signal as containing a tone when the maximum difference is not greater than the threshold," while Hsieh uses the ZCR to determine if speech is present which does not teach or suggest

the claimed invention.

The Examiner correctly noted that Hsieh fails to provide a method for calculating a ZCR. However, Tasaki fails to make up for this deficiency because neither reference discloses a solution of calculating the ZCR when the amplitude of the signal is zero at the zero crossing point. Each reference suffers from the problem solved by the present invention, that the algorithm used will not count a sample whose amplitude is zero, which results in an inaccurate ZCR calculation and leads to errors, described in paragraph 13:

[0013] Without some modification to the recommendation in G.729B, when the recommended algorithm counts samples for the zero crossing rate, it will not count a sample whose amplitude is zero, resulting in an inaccurate zero crossing rate calculation. Therefore, what is needed is a method for correcting the errors associated with calculating a zero crossing rate for a voice activity detector and a method to detect tone signals based upon the correct zero crossing rate.

Tasaki describes a simple speech detection method that uses the zero crossing counter to compare whether the signal has crossed the zero line using signs, and when the "signs are not the same, it is detected to have crossed zero and the case is counted...there is another way such that the adjacent samples are multiplied, and if the result is negative number or zero, it is detected to have crossed zero..." (col. 23 l. 51-63). The counting in Tasaki is used after speech is detected in order to configure the "frictional sound likeness evaluator 27," (col. 24, l. 13) not to perform a detection of whether tone exists in the signal.

Neither reference nor the combination of references address anything related to the problem at issue, though, of a zero amplitude of the signal at the zero crossing point.

The claimed invention performs “defining a threshold for zero amplitude change by determining, for a signal with a zero value amplitude at a zero crossing point, a tangent value of the signal, and by defining the zero value amplitude as a non-zero value depending upon the tangent of said signal at the zero crossing point,” as recited in claims 1 and 9. The claims use a method to define the zero value amplitude as a non-zero value, which is neither taught nor suggested either reference or the combination of references. Both Hsieh and Tasaki would result in errors caused by mis-counting the zero crossing where there is a zero amplitude in the signal.

Regarding the rejection to claim 4, Hsieh neither teaches nor suggests how to perform its method by calculating the ZCR when the signal fails to cross the zero line. The claimed invention addresses this scenario by “defining a threshold for zero amplitude change of a signal; where a portion of said signal does not contain a zero crossing point,” and then “defining a range of said signal that contains a zero crossing point,” as recited in claim 4. In Hsieh’s method, if the signal does not cross the zero point, it counts it as not containing speech (see paragraph 21) and Tasaki would simply not count the signal since there was no zero crossing (see col. 23, l. 54-55). In the present invention, the signal sample itself is important in order to detect a tone so that if the signal does not contain a zero crossing, the ^{*}range of the signal is expanded until a zero crossing is included. This is neither taught nor suggested by Hsieh and Tasaki.

For the reasons stated above, Applicant respectfully submits that the claims are fully patentable over the cited references. Based on the foregoing, the Examiner is

respectfully requested to reconsider and withdraw the rejections.

THE 35 USC 103 REJECTION TO HSIEH

The Examiner rejected claims 7 and 15 as unpatentable over Hsieh because it is alleged that the tone detection in Hsieh is the same as detecting signals according to ITU G.729 Annex B for a VAD device. This is respectfully incorrect because Hsieh's tone detection is used in a walkie-talkie for a continuous tone-coded squelch system (CTCSS). The present invention is directed towards a voice activity detection device in under G.729, which is a standard codec used in packet networks for voice over Internet Protocol applications. The packetized transmission of encoded voice data according to a specific ITU protocol cannot be analogized to a the CTCSS system used in walkie-talkies, they are simply different technologies. For example, G.729 is a specific codec used in a packetized voice network transmission. CTCSS cannot use G.729, and vice-versa. Any wireless transmission using G.729 would have to be under 802.11 or Bluetooth protocols using packets for transmission, whereas CTCSS uses simple radio frequency technology to transmit voice over a channel at a certain frequency.

CONCLUSION

In view of the foregoing, Applicant submit that all the claims presently pending in the Application are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above Application to

Appl. No. 10/652,483
Amendment to Nov. 1, 2005 Action

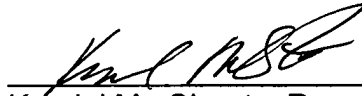
issue at the earliest possible time.

Should the Examiner find the Application to be other than in condition for allowance, the Examiner may contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview. The commissioner is hereby authorized to charge any fees associated with this communication to Client's Deposit Account No. 20-0668.

Respectfully Submitted,

Date: _____

2/3/06



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I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: the Commissioner for Patents, United States Patent and Trademark Office, PO Box 1450, Alexandria, VA 22313-1450 on February 3, 2006.


Kendal M. Sheets

2/3/06
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